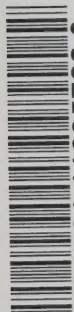


Protecting The Aquatic Environment



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ENVIRONMENTAL BOATING TIP
Includes
tips for
recreational
and working
boaters



A Boater's Guide



Fisheries and Oceans
Canada

Coast Guard

Pêches et Océans
Canada

Garde côtière

Canada



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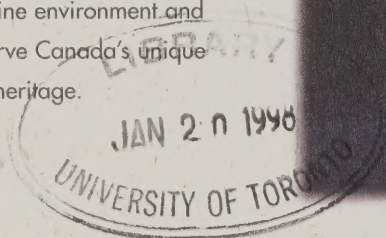
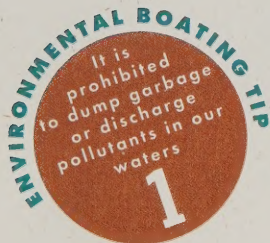
May, 1997

AZG-5006

I n t r o d u c t i o n

**The Waters,
Wetlands And
Shores Of Canada
Belong To Everyone**

The waters, wetlands, and shores of Canada belong to everyone. We all have a responsibility to protect this priceless heritage by minimizing our impact on the aquatic environment. As part of its mandate to promote safety and protect the marine environment, the Canadian Coast Guard is providing this guide for recreational boaters. We hope it will help you to enjoy our marine environment and to preserve Canada's unique coastal heritage.

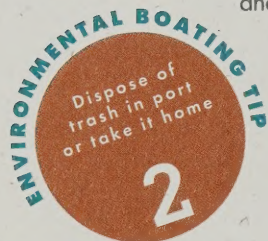


Waste Not!

Trash is one of the most visible kinds of pollution in our marine environment. An amazing range of refuse litters our shorelines — plastic bottles, pieces of styrofoam, garbage bags, discarded nets, cans, and so on. Plastic and other kinds of trash often trap, injure

and kill aquatic life and birds. They also foul props or intake fittings on recreational vessels. Oils, detergents,

sewage, and toxic products carelessly discharged into the water are less visible forms of pollution, but they are equally dangerous to marine life. Fish, shellfish, sea birds, and other forms of aquatic life require a balance of nutrients, oxygen and clean water to survive. Even small quantities of toxic products in the water can disrupt this balance, with devastating effects.



Cleaning A Boat Can Dirty A Lot Of Water

Here are some suggestions for preventing the kind of pollution that often ends up in our waters.

Looking After Your Garbage

- Don't litter.
- Bring all your garbage back.
- Don't let trash get thrown, blown, or washed overboard.
- Dispose of trash in port or take it home.
- Separate recyclable material.
- Buy products without plastic or excessive packaging.
- Take re-usable containers aboard.
- Encourage marinas, yacht clubs, and moorage facilities to

provide garbage and recycling receptacles.

Keeping Things Clean

Cleaning any boat — even a small one — can dirty a lot of water. Many cleaning products contain phosphates and other chemicals that are toxic to aquatic ecosystems. When you use these products, you get your boat clean, but you leave the grunge and pollutants behind in the marine environment. All soaps persist throughout the water column and are extremely harmful to aquatic life forms. The easiest

way to keep phosphates and other toxic cleansers out of the water is to leave them at home.

Note: In Canada, manufacturers do not have to substantiate such claims as "non polluting" and "fully biodegradable." Remember that all detergents — even those that call themselves "environment friendly" or "green" — contain polluting phosphates and nitrates. The "Environmental Choice" logo indicates a degree of acceptability.



**There Are Three
Million Pleasure
Craft In Canada,
Most With Two-
Stroke Engines**

Adding detergents to washing water produces grey water. Phosphates cause excessive algae growth in fresh water. When algae decompose, they rob water of oxygen and cause damage to fish and wildlife. Avoid discharging grey water into the environment.

- Do less washing.
- Don't discharge wash water.
- Never let dishes dry dirty. Soak them. If they are greasy, wipe them with a cloth first. Wash with a minimum of soapy water. Use a few drops of a mild detergent.
- Do your dishes on shore.

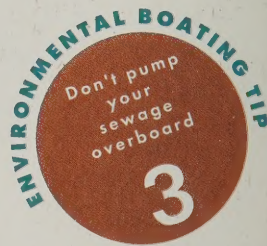
- Skip the shower and have a "bird bath."
- Do your cleaning at home or at your marina. Anything that is not appropriate to do there is not appropriate elsewhere either.



- Wax your boat. A good coat of wax prevents surface dirt from becoming engrained.

This will reduce the need for detergents when you wash your boat. Pollen, dust, spores, or salt occur naturally and will do no harm when they are washed into the water.

- Avoid using harsh cleaners, soaps or detergents. They destroy protective wax coatings, damage the environment, and reduce water quality.



Alternatives to Toxic Cleansers

Fibreglass	Baking soda and salt
Aluminum	1 Tbsp of cream of tartar in a half litre of hot water
Brass	Worcestershire sauce, vinegar and salt solution
Chrome	Vinegar and salt solution
Copper	Lemon juice and salt solution
Decks	1 part vinegar to 8 parts water
Hair	Baby shampoo (phosphate-free and Ph balanced)
Hands	Baby oil or margarine
Clear plastic	1 part vinegar to 2 parts water
Mildew	Vinegar and salt solution
Shower	Wet the area, apply baking soda, and wipe
Toilet	Baking soda
Windows	1 part vinegar to 2 parts water
Wood	Polish with olive oil
Chrome/metal	Polish with baby oil
Bleaching	Hydrogen peroxide
Scouring	Baking soda



Managing Your Sewage Waste

Heads or Marine Sanitation Devices

There are currently five systems for dealing with sewage on recreational and small fishing vessels.

- Marine Sanitation Device (MSD) Type I.

This system breaks up the sewage and disinfects it with chemicals, then discharges the treated sewage overboard.

Note: there are growing concerns about the environmental effects of the chemicals used in these devices.

- Marine Sanitation Device (MSD) Type II.

This is a more sophisticated and more expensive system than Type I. It treats the sewage to a higher degree through maceration and biological decomposition.



- Marine Sanitation Device (MSD) Type III.

This is a system with a holding tank that can store raw, untreated sewage until you can dispose of it properly at a pump-out station. It is acceptable to add deodorizers. Installation cost for a holding tank is usually less than \$1500.

- Portable self-contained toilet. *If your boat doesn't have an installed toilet, you should consider using a portable one, commonly referred to as a "port-a-potty." It should be emptied at a pump-out station or proper disposal site.*

IMPORTANT NOTE:
Discharging sewage is prohibited in some Canadian waters.

These include:

- Ontario — Great Lakes and all provincial waters
- Manitoba — parts of the Assiniboine River, Shoal Lake, and parts of the Red River
- British Columbia — Okanagan, Shuswap, and Mara Lakes

Always check locally because a number of other areas in Canada have also applied for sewage prohibitions.

**There Are
Concerns About
The Environmental
Effects Of The
Chemicals Used
In Marine
Sanitation
Devices**

- "Over the side"

If your boat discharges sewage directly overboard, you are required to comply with local pollution prevention regulations which may prohibit the use of a toilet in restricted waters. As a matter of common courtesy, do not use these toilet facilities while moored or while in anchorages, swimming areas, and harbours.

Holding Tanks

Holding tanks are a good idea, but they require pump-out facilities ashore. If possible, avoid disinfectants, which usually contain harsh chemicals.

Tips for Pumping Out

- Follow pump-out instructions.
- If instructions aren't posted, ask.
- After you finish pumping out, rinse water through the system.
- Only pump out your holding tank.
- Turn off the pump when you are finished.

Taking Charge of Sewage Waste

- Upgrade your marine sanitation devices, if required.
- Use your sanitation

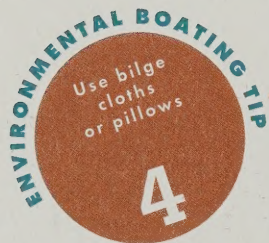
device with discretion.

- Encourage your marine or yacht club to install a pump-out service.
- Educate others about their use of marine sanitation devices.
- Don't pump your sewage overboard in anchorages, marinas, or swimming areas.



Reducing Contamination from Oil and Fuel

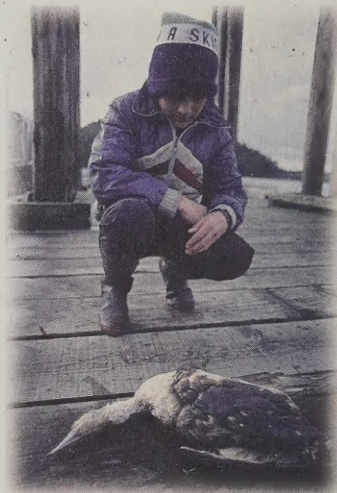
Diesel, gas, and petroleum lubricants are deadly for the marine environment. Boat engines, automatic bilge pumps, fuel handling facilities, and accidents are responsible for spilling a great quantity of oil and fuel. The tremendous volume of hydrocarbon and oil pollution entering North America's waters every year from recreational boating is estimated to be more than 15 times the amount of the Exxon Valdez spill (up to one billion litres per year).



Two-stroke engines are the most important source of a persistent form of pollution that has devastating effects on the aquatic environment. An estimated 30 percent of all fuel and oil used in two-stroke engines ends up in the water. Exhaust fumes from both two- and four-stroke engines are of concern because these engines usually lack any form of emission control.

There are approximately three million pleasure craft in Canada, most with two-stroke engines. Taken individually, their impact may be small; collectively it is a major concern. Manufacturers around the world are responding

to this concern by developing four-stroke marine engines, lean-burn two-stroke engines, and fuel injection systems which greatly reduce the amount of oil and fuel entering the water and air emissions.



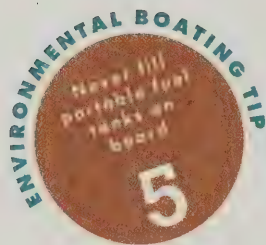
Reducing Pollution from Bilges

Bilges are a major source of marine pollution because bilges tend to collect engine oil, fuel, anti-freeze, and transmission fluid, to name only a few pollutants. When these fluids are pumped overboard, usually by automatic bilge pumps, they have a major negative environmental impact. Bilge cleaners, even the biodegradable ones, merely emulsify or break down the oil into tiny, less visible droplets. This process spreads the fluids

over a greater volume of water and severely inhibits all forms of marine life — from mammals, to fish, to plants, to algae. Absorbent “bilge pillows” are extremely useful because they are designed to absorb petroleum products and repel water. Here are some ways to keep pollution from bilges to a minimum.

- *Make sure the engine(s) are in good condition, with no leaking seals, gaskets, or hoses.*
- *Fit a tray underneath the engine, if possible, to contain any spill.*
- *Turn off automatic bilge pumps; use them only when required and when the bilge contains only water.*
- *Use one or two bilge cloths or pillows. Dispose of used bilge absorbent material in approved garbage containers.*
- *When it is necessary to clean the bilge, do not flush out oily residues. Use disposable cloths to absorb oil, and dispose of them properly.*
- **CAUTION:** *make sure bilges do not contain gasoline or propane. If explosive vapours are present, get everyone off the vessel and ventilate thoroughly.*
- *Use bio-bilge or enzyme cleaners only as a last option.*

Bilges Collect Engine Oil, Fuel, Transmission Fluid And Other Pollutants



- Some marinas offer a bilge pump-out service. This is the best option.
- Fit an oil-absorbent filter to your bilge pump's overboard discharge hose.

Protecting the Environment While Fuelling Your Boat

When fuelling your boat, use extra caution and avoid any spills. Raw fuel is extremely harmful to the marine environment. Be prepared to deal with any spill quickly and effectively. It is the law. Never fuel a boat by yourself. Here are some suggestions for safe fuelling.

- Have a cloth at hand to catch any spills. Use one for the filler and one for the fuel tank vent. Pay attention!
- If you have portable fuel tanks, never fill them on board. Take them ashore where spills are less likely to occur. Fire regulations require that you fill portable fuel tanks off the boat.
- If you have engine-mounted tanks, it is best to take the motor ashore to refuel. Use a funnel and have an absorbent cloth at hand.
- If you have fixed or built-in tanks:
 - know the capacity of your fuel tank.
 - have an accurate fuel gauge.
 - determine how much fuel you need.
 - do not overfill. Excess fuel can escape through the vent line when the fuel expands as it warms, or when the waves are rough.
 - while you are filling the tank, use your hand to check for air escaping from the vent. When the tank is nearly full, you will feel a distinct increase in air flow. That is the signal to stop filling.
 - install an anti-surge valve in the fuel vent line to prevent fuel from leaking overboard.

M a i n t a i n i n g Y o u r B o a t

Antifouling Coatings

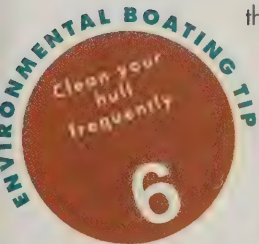
Most antifouling bottom paints are harmful to marine life. The newest coatings are formulated to have a less toxic and less long-lasting effect. There are

three main types in use: ablative, non-ablative, and hard antifouling. The hard antifouling type is the most environment friendly.

It has extended antifouling properties with limited leaching or sloughing of toxic metals

into the marine environment.

- *If you sand, scrape, or remove any antifoulant from your hull, collect all paint residue and correctly dispose of it at an appropriate household waste facility.*
- *Silicon, teflon, and other "non-fouling" paints rely on a slick surface to inhibit growth rather than on toxic ingredients to kill growth.*
- *Instead of using an antifoulant coating, try using regular paint and a coat of slick bottom wax.*





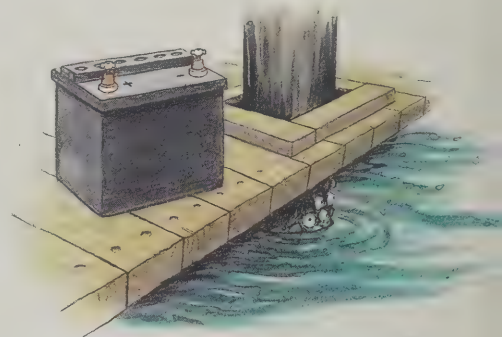
- If you have a small boat, you can avoid using antifouling paint by storing the boat on dry land.
- Always dispose of old paint, solvents, and thinners at an appropriate household waste facility. Do not dispose of paint or chemical containers in regular dumpsters.



- Treat partially filled containers as hazardous waste. Before you throw away any leftover chemicals or paints, ask around to see if someone else can use them.
- Clean the hull at frequent intervals with a long-handled brush; this will reduce the need for antifouling coatings.
- Treat partially filled containers with fresh water, then coat the terminals and cable ends with petroleum jelly.
- Prevent battery cells from freezing. Make sure the cells are filled with distilled water and the battery is fully charged.

Batteries

- When you replace any batteries, make sure to recycle the old ones.
- To reduce corrosion, clean battery terminals with baking soda, rinse



Respecting Others

Protect Marine Shore Life

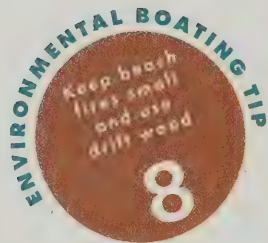
Beaches are fascinating places, especially when the tide goes out, but the organisms that live on beaches have a difficult existence. As the daily tide falls and rises, these organisms often experience severe changes in temperature, light, salinity, and oxygenation. Human activity can destroy delicate shore habitats for small marine organisms. So take care. A single rock

provides shelter for clams, crabs, fish, periwinkles, tube worms, and a growing space for barnacles and seaweeds. When exploring the flora and fauna of a beach:

- *be gentle with every organism, and put it back exactly where you found it.*
- *turn rocks carefully and return them to their original position*
- *do not collect marine life, but observe it in its natural habitat.*
- *avoid walking on oysters, clams, and barnacles.*



**A Single
Rock
Provides
Shelter And
Growing
Space**



Protect Our Beaches

We all enjoy a stroll and a campfire on the beach, especially at the end of a boat trip. It's important to ensure that others have the same opportunity to share an unspoiled experience. After visiting a beach, you should leave little or no trace of your presence. Here are some ways to maintain for a low environmental impact.

- *Keep beach fires small and use only drift wood.*
- *Remove traces of fire pits by spreading the rocks and covering the ashes.*

- *Collect all litter and dispose of it at a land-based disposal facility.*
- *Dismantle temporary structures and shelters made of drift wood and other shore materials.*
- *Pack out human and pet excrement.*

Respect Areas of Special Sensitivity

The coast has many marine areas that are especially sensitive to boating and to people. These areas include seal haul-outs, bird rookeries,

whale-watching sites, estuaries and wetlands, and aquaculture sites. Boaters must make special efforts to avoid inadvertently harming these areas and the animals that depend on them.



Quiet Craft Can Frighten An Unsuspecting Mammal

Seal Haul-Outs

Otters and harbour, fur, and California seals often congregate on log booms and small rocky islets. Avoid disturbing the animals at or near these haul-outs.

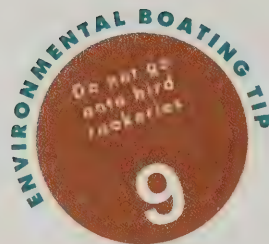
- *Observe seals and otters from a distance.*
- *Do not chase or otherwise harass them.*
- *Do not feed them.*

Bird Rookeries

Many marine birds such as gulls, cormorants, puffins, and auklets nest on small islands, cliffs, and beach shorelines.

During the nesting season, these sites are extremely sensitive to disturbance by humans, and a chick that leaves the protection of its nest and its parents has little or no chance of surviving. Most of these sites are designated as ecological reserves. They are legally protected from human intrusion. You can help protect these areas.

- *Observe birds from your boat and at a distance.*
- *Do not go onto rookeries.*
- *Keep dogs and cats off rookeries.*



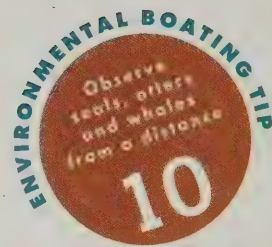
**The Livelihood
Of Whole
Communities
Depends On
Aquaculture Sites**

Whale-Watching Sites

Canada is fortunate in having three coasts and the Gulf of St. Lawrence that provide diverse habitats for a variety of whales, from the spectacular Orcas to the Great Blue whale. Because whale-watching has become so popular, we need to take care not to disturb these wonderful creatures. It is against the law to disturb whales or approach them too closely. Quiet craft such as canoes and kayaks can frighten or surprise an

unsuspecting mammal. Here are some tips on good whale-watching etiquette.

- *Respect the rules when watching whales.*
- *Always observe whales from a distance.*
- *Avoid erratic manoeuvres, and never chase them.*
- *Reduce your engine speed and make as little noise as possible.*



The Smallest Estuary Has Significant Ecological Importance

Estuaries and Wetlands

Any type of shoreline is affected by the presence of boats and people, but estuaries and wetlands are particularly sensitive to disturbance. These areas are typically low-energy mud or sand flats located at the mouth of fresh-water creeks and rivers. The interface between land, river, and sea creates a highly productive environment for vegetation, fish, birds, and mammals. Even the smallest estuary or wetland has significant ecological importance. They are a joy to visit, but take special care not to damage them.

- *Do not disturb wildlife in estuaries or wetlands.*
- *Avoid walking on vegetation in mud flats and estuaries.*
- *Do not discharge any sewage, grey water, or bilge near estuaries and wetlands.*

Aquaculture Sites

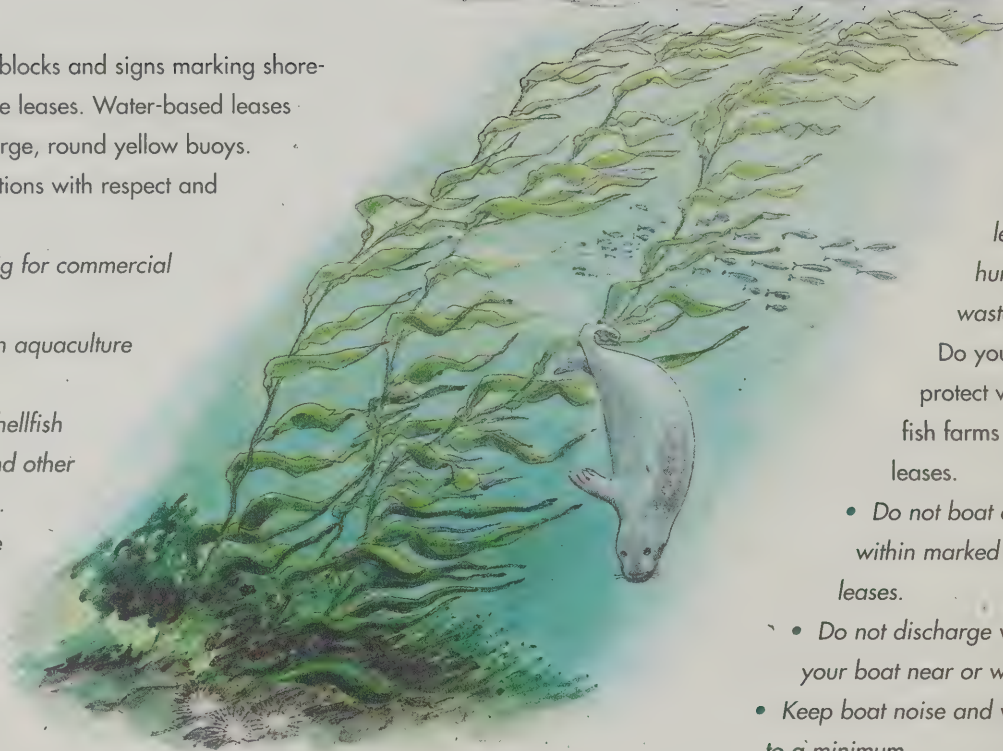
The farming of fish and shellfish is a growing industry on Canada's coasts. In many cases, the livelihood of individuals and whole communities depends on protecting aquaculture sites and facilities. Often boaters share areas such as oyster grow-outs located on beaches

and oyster long-lines and salmon farms located within sheltered coves. Shellfish leases are highly sensitive to contamination from human faecal waste. Farm salmon are sensitive to boat noise and wash. Look for



stakes or cement blocks and signs marking shore-based aquaculture leases. Water-based leases are marked by large, round yellow buoys. Treat these operations with respect and consideration.

- Do not pick or dig for commercial shellfish.
- Avoid walking on aquaculture leases.
- Do not remove shellfish growing bags and other related structures.
- Do not discharge wastes from your boat near shellfish sites.



- Do not contaminate aquaculture leases with human or pet wastes.

Do your part to protect water-based fish farms and shellfish leases.

- Do not boat or moor within marked aquaculture leases.
- Do not discharge wastes from your boat near or within leases.
- Keep boat noise and wash to a minimum.

**Help Make
The Aquatic
Environment
Pleasant For
Others**

**Protect Other
Aspects of the
Marine
Environment**

Boating can affect the marine environment in ways that may seem minor, but they can be a nuisance to other boaters.

These annoyances include boat wash, engine and other noise, and engine emissions. Their impact can travel a long distance over water. Help make the aquatic environment pleasant for others.

Reduce Noise

- Use underwater mufflers.
- Avoid operating boats or other

craft intensively in one area.

- Keep your radio low.

Reduce Emissions

- Keep your engine serviced and running cleanly.
- Use the correct oil/gas mixture for two-stroke engines.

Reduce Boat Wash

- Be aware of potential damage to marinas, aquaculture facilities, swimming areas, and slow down when you are in their vicinity.
- Obey speed signs.



Controlling Unwanted Transplants

Zebra Mussels

The barnacle-like zebra mussel poses a multibillion dollar threat to North America's industrial, agricultural, and municipal water supplies. It could also become a costly nuisance for freshwater shipping, for fishing, and for shellfish harvesting as well. The zebra mussel was first found in the Great Lakes in 1988, and it is invading other waters. You can help prevent it from becoming more

widespread and invading other inland lakes and rivers by flushing your engine and by ensuring that hull, machinery and bait-wells are free of zebra mussels.

How to Identify the Zebra Mussel

Zebra mussels look like small clams with a yellowish or brownish D-shaped shell, usually with alternating dark and light-coloured stripes (hence the name). They can be up to 5 cm (2") long, but

most are under 2.5 cm (1"). They inhabit shallow, algae-rich water and usually grow in clusters. Zebra mussels are the only freshwater mollusks that can firmly attach themselves to solid objects — boat hulls, submerged rocks, dock pilings, etc.



**The Zebra
Mussel Poses
A Multibillion
Dollar Threat
To North
America's
Water Supplies**

**What to Do If You Think
the Water is Infested
with Zebra Mussels**

- Drain all the water from the boat, bait-well, and engine cooling system.
- Inspect all equipment for signs of infestation.
- Scrape off grainy surfaces (it could be young zebra mussels).
- Wash your boat with water that is hotter than 40°C.
- Dry equipment in the hot sun for three or more days, then scrape off any remaining zebra mussels.
- Report and suspected growths of zebra mussels to your provincial environmental authority.

**Eurasian
Watermilfoil**

This perennial plant is exceedingly vigorous and displaces many native water plants. It chokes fresh waters; obstructs swimming, boating, and fishing; and impedes flood control, water conservation, and irrigation. Boats appear to be the source of contamination. In Canada, the infestation is confined at present to fresh water.

**What to Do If You Think
Your Boat Has Been in
Contact with Eurasian
Watermilfoil**

- Clear all plant material from the boat, motor, trailer, wet well, and anchor.
- Learn how to identify Eurasian watermilfoil.
- Report suspected new infestations to any provincial environmental office or agency.



Reporting Environmental Incidents And Cleaning Up

Who Should You Call?

If you notice someone polluting the water with oil, garbage or other pollutants, either accidentally or with wilful intent, report it immediately. Polluters are required to report any spill to the Coast Guard without delay. They are responsible for the costs of clean up and could be subject to heavy fines and penalties.

In areas with Coast Guard communication services, use Channel 16, VHF Marine radio.

By Telephone

1-800-889-8852	BC and Yukon
1-800-265-0237	Alberta Saskatchewan Manitoba Ontario Northwest Territories Arctic
1-800-463-4393	Quebec
1-800-565-1633	Maritime
1-800-563-2444	Newfoundland

What Kind of Response Can You Expect?

When you contact Coast Guard, a "fan-out" call goes to the persons and agencies responsible for cleaning up pollution and enforcing pollution controls. These include provincial authorities and private agencies. You can help by supplying information over the phone or VHF radio. A Coast Guard officer may investigate and initiate clean-up action.

How Can You Help?

You may be asked some of the following questions.

1. Where did the incident happen?
2. When and how did it happen?
3. What kind of pollution is it?
4. Approximately how much pollution is there?
5. What is the name of the person or vessel that caused it?



Regulating Pollution

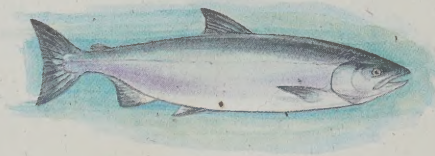
Canadian Regulations prohibit dumping garbage or discharging pollutants in Canadian waters. Most of the air pollution regulations do not affect recreational vessels, but boaters should be aware of the regulation that prohibits the discharge of ozone-depleting chlorofluorocarbons (CFCs). CFCs are found in "Halon" type fire extinguishers.

Canada Shipping Act Regulations

For further details: <http://www.tc.gc.ca>, or contact your nearest Coast Guard office.

US Regulations

Like Canada, the United States regulates the discharge of pollutants. *NOTE: It is illegal to dump untreated sewage anywhere within the US three-mile territorial limit. In other protected waters, this limit is extended.*






*We are interested in your comments and questions. If you would like to get in touch with us, contact the
Office of Boating Safety, Canadian Coast Guard, **1-800-267-6687**.*



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